

The opinion in support of the decision being entered today was not written for publication and is not precedent of the Board.

Paper No. 33

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TADAO TAKAGI and TAKATOSHI ASHIZAWA

Appeal No. 1998-2102
Application 08/826,039

ON BRIEF

Before THOMAS, KRASS and LALL, Administrative Patent Judges.
LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the final rejection¹ of claims 16 to 22, 24 to 28, and 30. Claims 1 to 15, 23, 29 and 31 have been canceled.

¹ There was an amendment after the final rejection as paper no. 25 which was entered by the Examiner [paper no. 26].

The invention is related to a vibration actuator comprising a vibration element which vibrates with a first vibration mode (torsional vibration or longitudinal vibration) and with a second vibration mode which is in a direction different from the first vibration mode, and a relative moving member which executes relative motion in accordance with the vibration of the vibration element. A resonance frequency of the vibration element in the first mode is higher than the resonance frequency of the vibration element in the second vibration mode so that the relative moving member is driven in a stable state. The invention is further illustrated by the following claim below.

16. A vibration actuator comprising:

a vibration element which vibrates with a first vibration mode and with a second vibration mode which is in a direction different from the first vibration mode; and

a relative moving member which executes relative motion in accordance with the vibration of said vibration element,

in the first vibration mode, vibration of said vibration element being made substantially along a direction coincident with the direction of the relative motion, and in the second vibration mode, vibration of said vibration element being made substantially along a direction perpendicular to the vibration direction in the first vibration mode, and a resonance

frequency of said vibration element in the first vibration mode being higher than the resonance frequency of said vibration element in the second vibration mode so that said relative moving member is driven in a stable state.

The Examiner relies on the following references:

Mishiro 1989	4,812,697	Mar. 14,
Ohnishi et al. (Ohnishi) 1990	4,965,482	Oct. 23,
Yamaguchi 1992	5,101,132	Mar. 31,
Iijima 1993	5,200,665	Apr. 6,

Claims 16 and 17 stand rejected under 35 U.S.C. § 102 over Ohnishi. Claims 16 to 22 stand rejected under 35 U.S.C. § 102/103 over Yamaguchi. Claims 16 to 22 also stand rejected under 35 U.S.C. § 103 over Iijima. Claims 16, 17, 24 to 28, and 30 stand rejected under 35 U.S.C. § 102 over Mishiro, and 24 to 28, and 30 stand rejected under 35 U.S.C. § 103 over Ohnishi.

Rather than repeat the positions and the arguments of Appellants or the Examiner, we make reference to the briefs² and the answer for their respective positions.

OPINION

² A reply brief was filed as paper no. 31 which was entered in the record [paper no. 32].

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We have considered the rejections advanced by the Examiner. We have, likewise, reviewed Appellants' arguments against the rejections as set forth in the briefs.

We affirm-in-part.

Since there are rejections under both 35 U.S.C. § 102 and 35 U.S.C. § 103, we review the applicable laws before considering the rejections.

Rejection under 35 U.S.C. § 102

We note that a prior art reference anticipates the subject of a claim when the reference discloses every feature of the claimed invention, either explicitly or inherently (see Hazani v. Int'l Trade Comm'n, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1361 (Fed. Cir. 1997) and RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984)). Rejection under 35 U.S.C. § 103

In rejecting a claim under 35 U.S.C. § 103, an examiner is under a burden to make out a prima facie case of obviousness. If that burden is met, the burden of going forward then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then

determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

We are further guided by the precedence of our reviewing court, under both 35 U.S.C. § 102 and 103, that the limitations from the disclosure are not to be imported into the claims. In re Lundberg, 244 F.2d 543, 113 USPQ 530 (CCPA 1957); In re Queener, 796 F.2d 461, 230 USPQ 438 (Fed. Cir. 1986). We also note that the arguments not made separately for any individual claim or claims are considered waived. See 37 CFR § 1.192 (a) and (c). In re Baxter Travenol Labs., 952 F.2d 388, 391, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991) ("It is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art."); In re Wiechert, 370 F.2d 927, 936, 152 USPQ 247, 254 (CCPA 1967) ("This court has uniformly followed

the sound rule that an issue raised below which is not argued in this court, even if it has been properly brought here by reason of appeal is regarded as abandoned and will not be considered. It is our function as a court to decide disputed issues, not to create them.")

Analysis

At the outset, we note that Appellants have elected that all the claims on appeal stand or fall together [brief, page 3]. We, however, treat the claims as their scope and the Appellants' arguments apply to the claims.

Claims 16 and 17 under 35 U.S.C. § 102 over Ohnishi

We first consider claim 16. After our review of Appellants' arguments [brief, pages 3 to 6], the Examiner's rejection [final rejection, pages 4 to 5] and the Examiner's response to Appellants' arguments [answer, pages 3 to 4], we agree with Appellants that Ohnishi does not anticipate the claimed limitation of "a resonance frequency ... in the first vibration mode being higher than the resonance frequency ... in the second mode so that said relative moving member is

driven in a stable state." We find that the aim of Ohnishi's invention is to adjust the longitudinal and the torsional frequencies to match each other to achieve a stable state, see col. 2, lines 5 to 10. Contrary to the Examiner's assertions, there is no disclosure in Ohnishi that would suggest, let alone anticipate, a situation where one of the longitudinal and the torsional frequencies is higher than the other in a stable operation of the vibration actuator. Therefore, we do not sustain the anticipation rejection of claim 16 over Ohnishi.

However, as to claim 17, we reach an opposite result. Contrasted with claim 16, claim 17 recites that " a resonance frequency of ... [the] longitudinal vibration ...[be] made equal to or greater than ... a resonance frequency of ... [the] bending vibration" We find, as above regarding claim 16, that Ohnishi does show that Ohnishi manipulates the frequency adjusting means, for example, element 35 in figure 5, so that the longitudinal frequency matches with the torsional frequency in order to achieve a stable operation of the vibration actuator. Therefore, we sustain the anticipation rejection of claim 17 over Ohnishi.

Claims 16 to 22 under 35 U.S.C. § 102/103 over Yamaguchi

We first consider claim 16. Keeping in mind the arguments by Appellants [brief, pages 6 to 8] and the Examiner's position [final rejection, page 5 to 6 and answer, pages 3 to 4], we conclude that Yamaguchi does neither anticipate nor suggest the recited limitation of "a resonance frequency ... in the first vibration mode being higher than the resonance frequency ... in the second mode so that said relative moving member is driven in a stable state." We find that Yamaguchi clearly states (col. 2, lines 58 to 65) that "the first piezoelectric body 22 is caused to vibrate ... [at] the specified frequency f. []. Next, the second piezoelectric bodies 23a and 23b are caused to vibrate ... [at] specified frequency f." We find no teaching in Yamaguchi that would anticipate or suggest a stable operation of the actuator where the longitudinal and the torsional frequency were not equal. Thus, we do not sustain the rejection of claim 16 over Yamaguchi under 35 U.S.C. § 102/103.

With respect to claims 17 to 22, they are treated as one group in accordance with Appellants' election. We consider claim 17 as representative of the group. Claim 17, as we

noted above in our discussion regarding claim 17 and Ohnishi, recites the relationship of the longitudinal and the torsional frequencies as the two being equal, or one being greater than the other. We find that Yamaguchi does clearly disclose, as noted above regarding claim 16 and Yamaguchi, a stable operation of the actuator when the two frequencies are the same. Therefore, we sustain the rejection of claim 17 and its grouped claims 18 to 22 under 35 U.S.C. § 102/103 over Yamaguchi.

Claims 16 to 22 under 35 U.S.C. § 103 over Iijima

Since independent claims 16 and 17 are of different scope, we treat them separately. We take claim 16 first. Claim 16, inter alia, requires that the torsional and the longitudinal frequencies be of different magnitude and still the actuator should operate in a stable manner. Contrary to the Examiner's assertions, Iijima does not show or suggest that feature. In fact, Iijima states that "the resonance frequency f_L of the longitudinal vibration and the resonance frequency f_B [of the torsional vibration] ... are substantially equal to each other ..." (col. 5, lines 11 to 16). Therefore, we do not sustain the obviousness rejection

of claim 16 over Iijima.

However, claim 17 recites that the longitudinal and the torsional frequencies may be equal to, or different from, each other and a stable operation prevails in both cases. We have found above that Iijima does show that a stable operation of the actuator will be achieved when the two frequencies are made equal. Therefore, we sustain the obviousness rejection of claim 17 and its grouped claims 18 to 22 over Iijima.

Claims 16, 17, 24 to 28, and 30 under 35 U.S.C. § 102 over Mishiro

Since the scope of independent claim 17 is different from the scope of each of the independent claims 16 and 24, we will treat claim 17 separately. We first treat claim 16. Claim 16 calls for one of the resonance frequencies of the longitudinal and the torsional vibration to be higher than the other and still enable the actuator to operate in a stable state. Contrary to Appellants' arguments [brief, pages 10 to 12], we agree with the Examiner [final rejection, pages 7 to 8] that Mishiro, at col.5, lines 16 to 30, shows that a conventional actuator could have one frequency higher than the other (21.3 vs 13.2 kHz). However, on the other hand, we find that

Mishiro also discloses (col. 5, lines 31 to 38) that "[i]t has been difficult to make the respective resonant frequencies of the longitudinal vibration and the torsional vibration ... to coincide with each other, therefore, it has been difficult to generate a well controlled composite vibration" (emphasis added). We find that Mishiro therefore manipulates the physical dimensions of element 33 to assure that the two frequencies coincide and a stable operation is achieved; see also figure 8 and col. 6, lines 3 to 16. Therefore, even though Mishiro in part teaches a conventional actuator with the two different frequencies, Mishiro fails to teach the recited limitation that "said relative moving member is driven in a stable state." Independent claim 24 contains a corresponding limitation. Therefore, we do not sustain the anticipation rejection of claims 16, 24 to 28, and 30 over Mishiro.

Regarding claim 17, we reach a different conclusion. Claim 17 calls for the torsional and the longitudinal frequencies to be equal to each other, or one greater than the other, and still have the actuator operate in a stable state. From our discussion above regarding claim 16 and Mishiro, it

is clear that Mishiro does show that an actuator would operate in a stable state when the longitudinal and the torsional frequencies are made equal. Therefore, we sustain the anticipation rejection of claim 17 over Mishiro.

Claims 24 to 28, and 30 under 35 U.S.C. § 103 over
Ohnishi

After our review of Appellants' position [brief, pages 12 to 13 and reply brief, pages 1 to 3] and the Examiner's position [final rejection, page 8 and answer, pages 3 to 4], we agree with Appellants that, for the reasons above regarding 16 and Ohnishi, Ohnishi does not make obvious the claimed features of claim 24, particularly, the limitation of "the resonance frequency of ... torsional vibration ... being higher than the resonance frequency of said ... longitudinal vibration ... so that said relative moving member is driven in a stable state." Therefore, we do not sustain the obviousness rejection of claim 24 and its dependent claims 25 to 28, and 30 over Ohnishi.

In summary, we have sustained the anticipation rejection of claims 17 by Ohnishi, claims 17 to 22 by Yamaguchi (including the alternative obviousness rejection), and claim

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17 by Mishiro. We have also sustained the obviousness rejection of claims 17 to 22 over Iijima. However, we have not sustained the anticipation rejection of claim 16 by Ohnishi, claim 16 by Yamaguchi (including the alternative obviousness rejection), and claims 16, and 24 to 28, and 30 by Mishiro. We have also not sustained the obviousness rejection of claim 16 over Iijima, and claims 24 to 28 and 30 over Ohnishi.

Accordingly, the decision of the Examiner rejecting claims 16 to 22, 24 to 28, and 30 is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JAMES D. THOMAS)
Administrative Patent Judge)

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ERROL A. KRASS

) BOARD OF

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PATENT

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